

## Abstract

The invention is a method for diagnosing operation of a nonthermal  
5 plasma discharge device and a lean NO<sub>x</sub> trap disposed in the exhaust of an  
internal combustion engine. The method further includes reducing power to the  
nonthermal plasma discharge device and determining that the nonthermal  
plasma discharge device is operating properly when a concentration of NO<sub>x</sub> of  
exhaust gases exiting the lean NO<sub>x</sub> trap increases in response to reducing power  
10 to the nonthermal plasma discharge device. Additionally, the nonthermal  
plasma discharge device is found not to be operating when the NO<sub>x</sub>  
concentration remains substantially constant in response to a decrease in power  
supplied to the nonthermal plasma discharge device.